

DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 10
(Book Cliffs)
March 2012

BOUNDARY DESCRIPTION

Grand and Uintah counties—Boundary begins at Exit 164 on I-70 near the town of Green River; east on I-70 to the Utah-Colorado state line; north on this state line to the White River; west along this river to the Green River; south along this river to Swasey's Boat Ramp and the Hastings Road; south on this road to SR-19; south and east on SR-19 to Exit 164 on 1-70 near the town of Green River. **EXCLUDES ALL NATIVE AMERICAN TRUST LAND WITHIN THE BOUNDARY.**

LAND OWNERSHIP

RANGE AREA AND APPROXIMATE OWNERSHIP

Ownership	Yearlong range		Summer Range		Winter Range	
	Area (acres)	%	Area (acres)	%	Area (acres)	%
Forest Service	0	0%	0	0%	0	0%
Bureau of Land Management	145453	62%	160399	34%	899786	66%
Utah State Institutional Trust Lands	33770	14%	127776	27%	119242	9%
Native American Trust Lands	51816	22%	161229	35%	253474	19%
Private	4216	2%	9608	2%	90387	7%
Department of Defense	0	0%	0	0%	0	0%
USFWS Refuge	0	0%	0	0%	0	0%
National Parks	0	0%	0	0%	0	0%
Utah State Parks	0	0%	0	0%	0	0%
Utah Division of Wildlife Resources	0	0%	6518	1%	1689	0%
TOTAL	235255	100%	465531	100%	1364578	100%

UNIT MANAGEMENT GOALS

Manage for a population of healthy animals capable of providing a broad range of recreational opportunities, including hunting and viewing. Balance deer herd impacts on human needs, such as private property rights, agricultural crops and local economies. Maintain the population at a level that is within the long-term capability of the available habitat.

POPULATION MANAGEMENT OBJECTIVES

- < Target Winter Herd Size - The wintering deer herd will be maintained within the vegetative carrying capacity. This will be achieved by establishing short term population objectives if the trend of the rangeland Desired Component Index (DCI) values indicate a need. (The DCI is a measurement of the condition of mule deer winter range and relates to the potential “carrying capacity” for the study site. If short term population objectives are warranted due to declining range condition, they will be established and adjusted as the DCI reflects the need or opportunity.)

The most recent DCI ratings occurred in 2010. Winter range study sites appear stable. The Book Cliffs unit is a summer range limited area. Summer study site DCI values do not reflect a problem. Therefore, no short term population parameters are warranted.

Achieve a target population size of 15,000 wintering deer (modeled number) distributed in the following subpopulations:

	Objective
Bitter Creek, Subunit 10A	10,000
South, Subunit 10B	5,000
Unit 10 Total	15,000

(Subunit boundary descriptions are provided in the Appendix)

- < Herd Composition and Harvest – The Book Cliffs will be managed as a Limited Entry buck deer hunting unit, with a 3 year average postseason buck to doe ratio objective ranging from 25 to 35 bucks per 100 does. If buck to doe ratios are significantly different on the northern and southern subunits, changes to season dates and hunt boundaries may be explored to address this large disparity. Management buck hunts may be considered when the statewide plan is revised.

POPULATION MANAGEMENT STRATEGIES

Monitoring

- < Population Size - Utilizing harvest data, postseason and spring classifications and mortality estimates, a computer model has been developed to estimate winter population sizes. Wintering populations may be computer modeled for each herd subunit when deemed advantageous or when animal numbers appear to be reaching the objective.
- < Buck Age Structure - Monitor age class structure of the buck subpopulations through the use of tooth sampling, checking stations, postseason classification, uniform harvest surveys and field bag checks.
- < Harvest - The primary means of monitoring harvest will be through the statewide uniform harvest survey and the use of checking stations. Achieve the target population size by use of antlerless harvest using a variety of harvest methods and seasons. Recognize that buck harvest will be above or below what is expected due to climatic and productivity variables. Buck harvest strategies will be developed through the RAC and Wildlife Board process to achieve management objectives for buck: doe ratios.

Limiting Factors (May prevent achieving management objectives)

- < Crop Depredation - Take all steps necessary to minimize depredation as prescribed by state law and DWR policy.
- < Habitat – The vast expanse of the Book Cliffs herd unit is public land managed under a “multiple use”

directive. In recent years increased in energy development activities have and will continue to contribute to substantial habitat losses and increasing habitat fragmentation. Development of mineral resources through traditional well pads and associated drilling and production facilities may negatively impact deer habitat quality and quantity through loss, disturbance and fragmentation. The paving of the Seep Ridge Road may contribute to increased habitat fragmentation and deer vehicle collisions. In addition to existing mineral lease activities, future development of tar sands and/or oil shale extraction activities pose a significant additional threat to deer habitat. The Book Cliffs deer herd is summer range limited and exhibits slower herd recovery following significant population declines. Proliferation of non-system roads and increasing ATV and OHV use compromises deer security and escape possibilities. Domestic cattle grazing outside of recognized grazing plan utilization levels and seasons may negatively impact deer forage availability and condition. Excessive habitat utilization will be addressed when observed.

- < Predation - Follow DWR predator management policy:
 - If the population estimate is less than 90% of objective and fawn to doe ratio drops below 70 for 2 of the last 3 years or if the fawn survival rate drops below 50% for one year, then a Predator Management Plan targeting coyotes will be implemented on that subunit.
 - If the population estimate is less than 90% of objective and the doe survival rate drops below 85% for 2 of the last 3 years or below 80% for one year, then a Predator Management Plan targeting cougar would be implemented on that subunit.

- < Highway Mortality - Cooperate with the Utah Department of Transportation and appropriate county road departments in construction of fences, crossing structures and warning signs etc. Especially in conjunction with the paving of the Seep Ridge Road. The DWR will also continue working collecting data as part of the Seep Ridge Road deer radio collar study examining the impacts of the paving of the Seep Ridge Road on mule deer.

- < Illegal Harvest - Support law enforcement efforts to educate the public concerning poaching and reduce illegal taking of deer. In cooperation with the Law Enforcement Section develop specific preventive measures within the context of an Action Plan to prevent illegal harvest.

HABITAT MANAGEMENT OBJECTIVES

- < Maintain and/or enhance forage production through direct range improvements to support and maintain herd population management objectives.

- < Work with private landowners and, federal, state, local and tribal governments to maintain and protect critical and existing ranges from future losses and degradation.

- < Provide improved habitat security and escapement opportunities for deer.

- < Mitigate impacts from energy development activities.

- < Minimize deer vehicle collisions along soon to be paved Seep Ridge Road corridor.

HABITAT MANAGEMENT STRATEGIES

- < Continue to monitor permanent range trend studies located throughout the unit.

- < Conduct cooperative seasonal range rides and surveys to evaluate forage condition and utilization. Determining opportunities for habitat improvements will be an integral part of these surveys.

- < Work cooperatively to utilize grazing, prescribed burning and other recognized vegetative manipulation techniques to enhance deer forage quantity and quality.
- < Utilize antlerless deer harvest to improve or protect forage conditions when vegetative declines are attributed to deer over utilization.
- < Cooperate with and provide input to land management planning efforts dealing with actions affecting habitat security, quality and quantity.
- < Work with land management agencies and energy companies to minimize and mitigate impacts of energy development activities. Oil and Gas specific habitat biologists will lead this effort.
- < Continue to monitor deer survival in relation to the paving of the Seep Ridge Road and work to minimize deer vehicle collisions through fencing, crossing structures, signage etc.

PERMANENT RANGE TREND SUMMARIES

In 2010 mule deer habitat range trend Desirable Conditions Indices were calculated for 22 permanent range trend sites on the North Book Cliffs and 7 permanent range trend study sites on the South Book Cliffs. On the North Book Cliffs 5 “High Potential” summer range sites were evaluated, 8 “Mid Potential” spring/fall transition range sites were evaluated, and 9 “low potential” winter range sites were evaluated. On the South Book Cliffs 7 “low potential” winter range sites were evaluated. These range trend studies show a general trend of stability over the last 10 years with the exception of browse availability on the South Book Cliffs which has declined. In addition, the forb component has generally declined in all these study sites as it has across much of Utah. Weather patterns are the driving force behind much of the trend in range conditions, but continued efforts to reduce pinion juniper monocultures, diversify plant communities, develop/protect limited water resources, increase vigor of browse communities and promote sustainable livestock grazing practices are critical.

Mountain Brush Sites (High)

North Book Cliffs (n=5)

Year	Score	Ranking
95/98	89.1	Good-Excellent
00/02	85.4	Good
05	79.8	Good
10	81.2	Good

Mountain Big Sagebrush Sites (Mid)

North Book Cliffs (n=8)

Year	Score	Ranking
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95/97/98	62.1	Fair
00	54.7	Fair
05	54.0	Fair
10	54.6	Fair

Wyoming Big Sagebrush Sites (Low)

North Book Cliffs (n=9)

Year	Score	Ranking
95/97	42.4	Fair
99/00	52.4	Good
05	29.9	Fair
10	49.4	Good

Wyoming Big Sagebrush Sites (Low)

South Book Cliffs (n=7)

Year	Score	Ranking
95	21.8	Poor
00	33.5	Fair
05	12.9	Poor
10	26.7	Poor-Fair

Unit 10 Book Cliffs, South Book Cliffs Subunit

Grand County - Boundary begins at the Utah-Colorado state line and the summit and drainage divide of the Book Cliffs; west along this summit and drainage divide to Diamond Ridge; southwest along Diamond Ridge and the Book Cliffs summit (north-south drainage divide) to the Uintah and Ouray Indian Reservation boundary (Hells Hole/head of Segoe Canyon); west along this boundary to the Green River; south along the Green River to Swasey boat ramp and Hastings Road; south along Hastings Road to SR-19; south and east along SR-19 to exit 164 of I-70; east along I-70 to the Utah-Colorado state line; north along this state line to the summit and drainage divide of the Book Cliffs.

Unit 10 Book Cliffs, North Book Cliffs Subunit

Uintah and Grand Counties - Boundary begins at the Utah-Colorado state line and the White River; south along this state line to the summit and drainage divide of the Book Cliffs; west along this summit and drainage divide to the Uintah and Ouray Indian Reservation boundary (Hells Hole/head of Segoe Canyon); west along this boundary to the Green River; north along the Green River to the White River; east along this river to the Utah-Colorado state line.

Duration of Plan

This unit management plan was approved by the Wildlife Board on _____ and will be in effect for five years from that date, or until amended.

DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 11
(Nine Mile)
March 2012

BOUNDARY DESCRIPTION

Carbon, Duchesne, Emery and Uintah Counties—Boundary begins at US-40 and US-191 in Duchesne; southwest on US-191 to US-6; southeast on US-6 to I-70; east on I-70 to Exit 164 and SR-19 near the town of Green River; north and west on SR-19 to Hastings Road; north on this road to the Swasey boat ramp and the Green River; north along this river to the Duchesne River; west along this river to US-40 at Myton; west on US-40 to US-191 in Duchesne.

LAND OWNERSHIP**RANGE AREA AND APPROXIMATE OWNERSHIP**

Ownership	Yearlong range		Summer Range		Winter Range	
	Area (acres)	%	Area (acres)	%	Area (acres)	%
Forest Service	7240	1%	35036	10%	57349	11%
Bureau of Land Management	315657	59%	111058	31%	296492	57%
Utah State Institutional Trust Lands	38845	7%	28819	8%	38596	8%
Native American Trust Lands	48508	9%	0	0%	48686	9%
Private	116726	22%	178895	51%	70679	14%
Department of Defense	0	0%	0	0%	0	0%
USFWS Refuge	0	0%	0	0%	0	0%
National Parks	0	0%	0	0%	0	0%
Utah State Parks	0	0%	0	0%	0	0%
Utah Division of Wildlife Resources	4890	1%	0	0%	6906	1%
TOTAL	531866	100%	353808	100%	518708	100%

UNIT MANAGEMENT GOALS

- Expand and improve mule deer populations within the carrying capacity of available habitats and in consideration of other land uses.

- Provide a diversity of hunting and viewing opportunities for mule deer throughout the unit.
- Conserve and improve mule deer habitat throughout the unit with emphasis on crucial ranges.

POPULATION MANAGEMENT OBJECTIVES

Long Term Objective –

Manage for a winter population of 8,500 deer, distributed across the Range Creek and Anthro subunits

Anthro subpopulation: 2,500
Range Creek subpopulation: 6,000

Herd Composition –

All Nine Mile subunits are General Season subunits and will be managed for a 3-year average postseason buck to doe ratio in accordance with the statewide plan.

POPULATION MANAGEMENT STRATEGIES

Monitoring

- Population Size - Winter population size will be estimated using a computer model that was developed to utilize harvest data, postseason and spring classifications and radio collar based survival estimates.
- Buck Age Structure - Monitor age class structure of the buck population through the use of checking stations, postseason classification, uniform harvest surveys and field bag checks.
- Harvest - The primary means of monitoring harvest will be through the statewide uniform harvest survey and the use of checking stations. Achieve the target population size by use of antlerless harvest using a variety of harvest methods and seasons. Recognize that buck harvest will be above or below what is expected due to climatic and productivity variables. Buck harvest strategies will be developed through the RAC and Wildlife Board process to achieve management objectives for buck: doe ratios

Limiting Factors (May prevent achieving management objectives)

- Crop Depredation - Take all steps necessary to minimize depredation as prescribed by state law and DWR policy.
- Habitat - Public land winter range availability, landowner acceptance and winter range forage conditions will determine herd size. Excessive habitat utilization will be addressed with hunting.
- Predation - Follow DWR predator management policy:

- If the population estimate is less than 90% of objective and fawn to doe ratio drops below 70 for 2 of the last 3 years or if the fawn survival rate drops below 50% for one year, then a Predator Management Plan targeting coyotes will be implemented on that subunit.
- If the population estimate is less than 90% of objective and the doe survival rate drops below 85% for 2 of the last 3 years or below 80% for one year, then a Predator Management Plan targeting cougar would be implemented on that subunit.
- Highway Mortality - Work with UDOT, Counties, Universities, local conservation groups, and landowners to minimize highway mortality by identifying locations of high deer-vehicle collisions and erecting sufficient wildlife crossing structures in those locations. Evaluate the effectiveness of the crossing structures over time and implement new technologies to improve future wildlife crossing structures.
- Illegal Harvest - Support law enforcement efforts to educate the public concerning poaching and reduce illegal taking of deer.

HABITAT MANAGEMENT OBJECTIVES

- Maintain mule deer habitat throughout the unit by protecting and enhancing existing crucial habitats and mitigating for losses due to natural and human impacts.
- Improve the quality and quantity of vegetation for mule deer on crucial range.
- Provide improved habitat security and escapement opportunities for deer.

HABITAT MANAGEMENT STRATEGIES

- Continue to monitor permanent Big Game Range Trend Studies of crucial mule deer range across the unit.
- Continue annual seasonal range rides and range assessments to evaluate forage condition and utilization.
- Work with land management agencies, conservation organizations, private landowners, and local leaders through the regional Watershed Restoration Initiative working groups to identify and prioritize mule deer habitats that are in need of enhancement or restoration.
- Initiate broad scale vegetative treatment projects to improve mule deer habitat with emphasis on drought or fire damaged sagebrush winter ranges, ranges that are being taken over by invasive annual grass species, and ranges being diminished by encroachment of conifers into sagebrush or aspen habitats.
- Properly manage elk populations to minimize competition with mule deer on crucial ranges.
- Work with state and federal land management agencies to properly manage livestock to enhance crucial mule deer ranges
- Minimize impacts and mitigate for losses of crucial habitat due to human impacts and energy development.
- Work with county, state, and federal agencies to limit the negative effects of roads by

reclaiming unused roads, properly planning new roads, and installing fencing and highway passage structures where roads disrupt normal mule deer migration patterns.

PERMANENT RANGE TREND SUMMARIES

Unit 11a, Nine Mile, Anthro Subunit

The following table summarizes the condition of deer winter range on Unit 11a, as indicated by DWR permanent Big Game Range Trend studies:

Year	Mean DCI score for Subunit	Classification	Unit-specific DCI score range: Poor	Unit-specific DCI score range: Fair	Unit-specific DCI score range: Good
1995	62	Good	10 – 24	25 – 44	45 - 64
2000	47	Good			
2005	65	Excellent			
2010	69	Excellent			

There are four range trend sites on the Anthro portion of the Nine Mile Management Unit. Two of these are on summer range areas and two on winter range sites to the north. The studies were revisited in 2010 but only data for the two winter range sites has been summarized and made available for DCI index comparisons.

Pinyon and junipers stands dominate much of the area but contain sufficient natural openings to provide good quality winter range. There is potential to provide more forage during the fall-spring period with treatment of pinyon-juniper sites. The limited, xeric summer range remains an important limiting factor for deer populations on this subunit.

The two winter range study sites are located in Cottonwood Canyon and Nutters Canyon and are in low potential vegetative types. Both locations showed improvement from the 2005 indices when they were visited in 2010. The Cottonwood Canyon site produced a 69 index in 2010 and the Nutters Canyon site rated a score of 68. These ratings both provide an excellent DCI index. The combined winter range average DCI rating was 69 for the Anthro subunit. This figure indicates that deer winter range is in the excellent condition range

Unit 11b, Nine Mile, Range Creek Subunit

The following tables summarize the condition of deer winter range on Unit 11b, as indicated by DWR permanent Big Game Range Trend studies:

DCI Scores for Mid-Level Potential Winter Ranges on the Nine Mile Range Creek Subunit 1994-2010 (n=4).

Year	Mean DCI score for Subunit	Classification
1994	55.5	Fair
2000	59.6	Fair
2005	62.4	Fair
2010	65.2	Fair-Good

DCI Scores for Low Potential Winter Ranges on the Nine Mile Range Creek Subunit 1994 - 2010 (n=7).

Year	Mean DCI score for Subunit	Classification
1994	33.3	Fair
2000	38.3	Fair
2005	36.3	Fair
2010	40.8	Fair

There were 11 permanent winter range trend sites on the Range Creek subunit of the Nine Mile unit that were read in 2010. Of these sites, 7 are low elevation winter range areas predominated by deer. The remaining 4 winter range sites are on the eastern slopes of the Tavaputs plateau draining in to the Green River and are utilized by both deer and elk, although elk use is more prevalent. These sites were last surveyed in 2010.

The overall trend in relative winter range health as noted by the DCI has been slightly improving over the past 16 years. Trends for the lower elevation deer winter range sites tend to have a declining forb community while grass and browse communities are stable and improving in the last several years. Most range trend sites show improving browse production and vigor with relatively little deer use, while several high use sites show declining browse production. Upper elevation winter range sites showed relatively stable to improving browse condition yet declining herbaceous understory trends.

High quality summer range is limiting on the subunit. A relatively small percentage of the unit occurs at high enough elevations to provide good summer range for deer.

Duration of Plan

This unit management plan was approved by the Wildlife Board on _____ and will be in effect for five years from that date, or until amended.

**DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 12
(San Rafael)
March 2012**

BOUNDARY DESCRIPTION

Carbon, Emery, Wayne, and Garfield counties - Boundary begins in Price at the junction of SR-10 and US-6; east on US-6 to I-70; east on I-70 to the Green River; south along the Green River to the Colorado River; south on the Colorado River and the west shore of Lake Powell to SR-95; north on SR-95 to SR-24; west on SR-24 to Caineville and the Caineville Wash road (hunters may harvest deer 2 miles south of SR-24 between SR-95 and the Notom Road); north along the Caineville Wash road to the Cathedral Valley road; west on the Cathedral Valley road to Rock Springs Bench and the Last Chance Desert road; north on the Last Chance Desert road to the Blue Flats road; north and east on the Blue Flats road to the Willow Springs road; north on the Willow Springs road towards Windy Peak and the Windy Peak road; west on the Windy Peak road to the junction of I-70 and SR-10; north on SR-10 to Price.

LAND OWNERSHIP

RANGE AREA AND APPROXIMATE OWNERSHIP

Unit 12 San Rafael	Yearlong range		Winter Range	
Ownership	Area (acres)	%	Area (acres)	%
Forest Service	0	0%	0	0%
Bureau of Land Management	127012	69%	3650	54.3%
Utah State Institutional Trust Lands	12913	7%	79	1.2%
Native American Trust Lands	0	0%	0	0%
Private	22019	12%	3000	44.6%
Department of Defense	0	0%	0	0%
USFWS Refuge	0	0%	0	0%
National Parks	17426	9.5%	0	0%
Utah State Parks	0	0%	0	0%
Utah Division of Wildlife Resources	314	.2%	0	0%
National Recreation Area	4458	2.3%	0	0%
TOTAL	184,141	100%	6,727	100%

UNIT MANAGEMENT GOALS

Manage for a population of healthy animals capable of providing a broad range of recreational opportunities, including hunting and viewing. Balance deer herd impacts on human needs, such

as private property rights, agricultural crops and local economies. Maintain the population at a level that is within the carrying capacity of the available habitat. Range Trend data is not collected on the San Rafael unit. The majority of deer on this unit utilize agricultural areas to some extent throughout the winter.

In 2011, when Unit by Unit deer management went into effect, the San Rafael unit was included in the Manti general season deer hunt boundary. Deer numbers are concentrated on the unit where there are agricultural corridors. These lands often provide favorable food, water, and cover to deer. Deer numbers along these corridors are not in decline and provide hunting opportunity to the public. Most of the deer harvest on this unit occurs near agricultural areas. The decision to keep the unit within the Manti general season boundaries was largely social, allowing local deer hunters the opportunity to hunt both sides of State Highway 10 on or near private land, which is where most of the deer on the San Rafael unit are found.

POPULATION MANAGEMENT OBJECTIVES

< Target Winter Herd Size: 1000 wintering deer.

1994-2005 Objective:	1,000
<u>2006-2012 Objective:</u>	<u>1,000</u>
Change:	0

< Herd Composition – Deer herds that can be reliably found and classified in the natural habitat are isolated and few. This results in sample size being very low, which would not represent the population on this unit. As a general rule, the Manti unit to the west will be closely monitored instead.

POPULATION MANAGEMENT STRATEGIES

Monitoring

< Population Size – Because this population is not directly monitored or modeled, the population size is not estimated.

< Harvest - The primary means of monitoring harvest will be through the statewide uniform harvest survey. Some harvested deer may also show up at DWR check stations.

Limiting Factors (May prevent achieving management objectives)

< Crop Depredation - Take all steps necessary to minimize depredation as prescribed by state law and DWR policy.

< Habitat - Very limited year-round habitat exists for deer on this unit. By far, the majority of deer on this unit are on private land. Excessive habitat utilization will be addressed.

< Predation - Refer to DWR predator management policy.

- Assess need for control by species, geographic area and season of year.

- Seek assistance from Wildlife Services when deer populations are depressed and where there is a reasonable chance of gaining some relief through a predator control effort. Predator control will be initiated via an approved, unit predator management plan.

- Recommend cougar harvest to benefit deer while maintaining the cougar as a valued resource in its own right.

- < Highway Mortality - Cooperate with the Utah Dept. Of Transportation in construction of highway fences, passage structures and warning signs etc.
- < Illegal Harvest - Should illegal kill become an identified and significant source of mortality attempt to develop specific preventive measures within the context of an Action Plan developed in cooperation with the Law Enforcement Section.

HABITAT MANAGEMENT STRATEGIES

- < Watershed Initiative habitat restoration projects will be reviewed on a case-by-case basis through the UPCD process. The focus of habitat restoration efforts on this unit will be towards desert bighorn sheep habitat in high priority areas as well as key mule deer habitat especially where there is encroachment of pinyon juniper.
- < The Utah Big Game Range Trend Study does not monitor this unit.
- < Work toward long term habitat protection and preservation through the use of agreements with federal agencies, local governments and the use of Conservation Easements etc. on private lands.
- < Implement "Habitat Management Plans" developed for DWR Wildlife Management Areas located on the unit.
- < Cooperate with federal land management agencies and local governments in developing and administering access management plans for the purposes of habitat protection and escape or security areas.

This unit management plan was approved by the Wildlife Board on _____ and will be in effect for five years from that date, or until amended.

APPENDIX - HUNT BOUNDARY DESCRIPTIONS

Central Mtns, Manti/San Rafael

Carbon, Emery, Sanpete, Sevier and Utah counties—Boundary begins US-6 and US-89 in Spanish Fork Canyon; southeast on US-6 to I-70; east on I-70 to the Green River; south along this river to the Colorado River; south along this river (and the west shore of Lake Powell) to SR-95; north on SR-95 to SR-24 (hunters may harvest deer within 2 miles south of SR-24 between SR-95 and the Notom Road); west on SR-24 to Caineville and the Caineville Wash road; north on this road to the Cathedral Valley road; west on this road to Rock Springs Bench and the Last Chance Desert road; north on this road to the Blue Flats road; north and east on this road to the Willow Springs road; north on this road towards Windy Peak and the Windy Peak road; north on this road to I-70; west on I-70 to US-89; north on US-89 to US-6 in Spanish Fork Canyon.

**DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 13
La Sal
March 2012**

BOUNDARY DESCRIPTIONS

Grand and San Juan counties - Boundary begins at the junction of I-70 and the Green River; south on the Green River to the Colorado River; north on the Colorado River to Kane Springs Creek; southeast along this creek to Hatch Wash; southeast along this wash to US-191; south on US-191 to the Big Indian Road; east on this road to the Lisbon Valley Road; east on this road to the Island Mesa Road; east on this road to the Colorado State Line; north on this line to I-70; west on I-70 to the Green River.

LAND OWNERSHIP

Unit 13A - La Sal, La Sal Mountains

RANGE AREA AND APPROXIMATE OWNERSHIP

Ownership	Yearlong range		Summer Range		Winter Range	
	Area (acres)	%	Area (acres)	%	Area (acres)	%
Forest Service	0	0	104835	58	36361	13
Bureau of Land Management	23173	49	2276	1	194381	70
Utah State Institutional Trust Lands	1248	3	29956	16	26447	9
Private	4211	9	44945	25	20887	8
Department of Defense	62	0.1	0	0	0	0
National Parks	18075	39	0	0	0	0
Utah State Parks	0	0	0	0	0	0
Utah Division of Wildlife Resources	0	0	0	0	0	0
TOTAL	46769	100	182012	100	278076	100

TOTAL FROM 2001 PLAN			126700		367000	
CHANGE (+/-)			+55312	*	-88924	*

* Change in acreage is refinement of deer habitat use data, not changes in habitat availability.

Unit 13B - La Sal, Dolores Triangle

RANGE AREA AND APPROXIMATE OWNERSHIP

Ownership	Yearlong range		Summer Range		Winter Range	
	Area (acres)	%	Area (acres)	%	Area (acres)	%
Forest Service	0	0	0	0	0	0
Bureau of Land Management	0	0	0	0	87718	87
Utah State Institutional Trust Lands	0	0	0	0	9553	9
Private	0	0	0	0	3514	4
TOTAL	0	0	0	0	100785	100
TOTAL FROM 2001 PLAN	0	0	0	0	94100	
CHANGE (+/-)	0	0	0	0	+6685	*

* Change in acreage is refinement of deer habitat use data, not changes in habitat availability.

UNIT MANAGEMENT GOALS

Manage the deer population for optimum herd size compatible with forage resources and existing land uses with emphasis on maintaining a diverse buck age structure. Consider various publics in managing deer to provide a diversity of hunting and viewing opportunities.

POPULATION MANAGEMENT OBJECTIVES

Target Herd Size

- < Long-term Objective - Achieve a winter target population of 19,400 deer. (13,000 deer on **La Sal Mountains** subunit and 6,400 deer on **Dolores Triangle** subunit).
- < Short-term Objective
La Sal Mountains – No change needed in population objective. DCI score from 2009 range trend survey is at upper end of “fair” classification range. Trend of DCI scores from previous surveys is slightly down due to continued declines in browse cover and perennial forb cover scores.

Dolores Triangle – A 20% reduction in population objective to 5,100 deer was implemented in 2006 due to poor range conditions indicated by low DCI values. The reduced short-term population objective will remain until range conditions improve to a “fair” DCI rating. Antlerless removal is not needed immediately because the current deer population is near 50% of objective and fawn production is poor. If the deer population approaches the short-term objective, antlerless removal in specific problem areas will be utilized. Although the DCI score from the 2010 range trend survey is at lower end of “poor” classification range, there is no apparent trend of DCI scores from previous

surveys. Slight fluctuations in the DCI scores have been primarily due to changes in perennial and annual grass cover. The heaviest browse utilization is in small sagebrush parks in lower Westwater that are adjacent to agricultural fields. These fields concentrate large numbers of wintering deer in the area. Losses in browse cover and increases in annual grasses in the trend study plots in Westwater are largely responsible for the very poor DCI score. Browse utilization in other areas is not excessive and DCI scores are not as low. This deer herd is primarily managed by Colorado hunting strategies. The number of deer wintering in this unit is dependent on winter severity, but even with normal snow levels, recent deer numbers using this winter range have declined considerably due to low population.

	Long-term Objective	2012-2016 Objective	Change
La Sal Mountains	13,000	13,000	0
Dolores Triangle	6,400	5,100	-1,300
UNIT TOTAL	19,400	18,100	-1,300

Herd Composition

- < **La Sal Mountains** – Maintain a three-year average postseason buck to doe ratio in accordance with the statewide plan.
- < **Dolores Triangle** – Maintain a three-year average postseason ratio of 25-35 bucks per 100 does.

POPULATION MANAGEMENT STRATEGIES

Monitoring

- < Harvest
La Sal Mountains - Buck harvest strategies will be developed through the RAC and Wildlife Board process to achieve management objectives for herd composition. Utilize antlerless harvest when population objectives are met or to address specific habitat and depredation concerns.

Dolores Triangle - Continue limited entry hunting to maintain herd composition objectives and quality hunting opportunities. Utilize antlerless harvest when population objectives are met or to address specific habitat and depredation concerns.
- < Population Size - Herd population size will be estimated by computer modeling based on data from postseason and spring classifications, mortality estimates and harvest surveys. The **Dolores Triangle** deer population will be modeled by the Colorado Division of Wildlife as part of their Unit #40 deer herd . About 40% of this herd winters in Utah; therefore, 40% of Colorado’s population estimate for Unit #40 was used as Utah’s population estimate.
- < Short-term Population Objective - Manage deer populations to attain satisfactory range conditions based on desirable components index (DCI) scores on winter ranges. Where winter range is a limiting factor, reduce current populations by 20% on any subunit when weighted DCI score falls in to “poor” classification or below. On subunits where winter range condition is classified as “fair” or better deer populations will be allowed to expand toward current long-term objectives.

- Management toward short-term objectives should consider the following:
- Management efforts should focus on improving deer habitat and carrying capacity.

- Declines in winter range carrying capacity are currently not entirely a result of over utilization by deer.
- Population control (if needed) and habitat improvement projects should be focused on areas where range degradation is most prevalent.
- Short-term population objectives should be evaluated and updated every 5 years as new range trend data is compiled.
- Biologists should closely monitor winter ranges. If deer utilization is excessive and is causing range degradation and increased overwinter deer mortality, short-term objectives should be reduced.

< Buck Age Structure - Age class structure of the buck population will be monitored through the use of harvest check stations, field harvest checks, postseason classification, and uniform harvest surveys.

Limiting Factors (May prevent achieving management objectives)

< Crop Depredation - Damage complaints will be addressed in accordance with established state laws and DWR policies.

< Habitat - Monitor range conditions and deer use to maintain habitat quality necessary to achieve population objectives (see Habitat Management Strategies). Identify areas on the **La Sal Mountains** where deer escapement could be enhanced through permanent or temporary road closures or other restrictions on motorized access. The **Dolores Triangle** subunit is entirely winter range for the Colorado unit #40 deer herd. Excessive habitat utilization will be addressed through antlerless harvest in specific problem areas.

< Predation - Follow DWR predator management policy:

- If the population estimate is less than 90% of objective and fawn to doe ratio drops below 70 for 2 of the last 3 years or if the fawn survival rate drops below 50% for one year, then a Predator Management Plan targeting coyotes will be implemented on that subunit.

-If the population estimate is less than 90% of objective and the doe survival rate drops below 85% for 2 of the last 3 years or below 80% for one year, then a Predator Management Plan targeting cougar would be implemented on that subunit.

< Highway Mortality - Cooperate with Utah Dept. of Transportation in construction of highway fences, passage structures, warning signs, etc..

< Illegal Harvest - Implement specific preventive measures within the context of an action plan developed in coordination with the Law Enforcement Section when illegal kill has been identified as a significant source of deer mortality.

HABITAT MANAGEMENT OBJECTIVES

< Maintain and protect existing critical deer ranges sufficient to support the population objectives. Seek cooperative projects to improve the quality and quantity of deer habitat. Promote enhancement of habitat security and escapement areas for deer.

HABITAT MANAGEMENT STRATEGIES

Monitoring

< Determine trends in habitat condition through permanent range trend studies, spring range

assessments, pellet transects, and field inspections. Land management agencies will similarly conduct range monitoring to determine vegetative trends, utilization and possible forage conflicts.

- < Range trend studies will be conducted by DWR to evaluate deer habitat health, trend, and carrying capacity using the DCI. The DCI index was created as an indicator of the general health of big game winter ranges. The index incorporates shrub cover, density and age composition as well as other key vegetation variables. Changes in DCI suggest changes in winter range capacity. The relationship between DCI and the changes in deer carrying capacity is difficult to quantify and is not known.

Habitat Protection and Maintenance

- < Work with public land management agencies to develop specific vegetative objectives to maintain the quality of important deer use areas.
- < Continue to coordinate with land management agencies in planning and evaluating resource uses and developments that could impact habitat quality.
- < Work toward long-term habitat protection and preservation through the use of agreements with land management agencies and local governments, and through the use of conservation easements, etc. on private lands.

Habitat Improvement

- < Cooperate with federal land management agencies and private landowners in carrying out habitat improvements such as reseedings, controlled burns, water developments etc. on public and private lands.
- < Cooperate with federal land management agencies and local governments in developing and administering access management plans for the purposes of habitat protection and escape or security areas.

PERMANENT RANGE TREND SUMMARIES

Unit 13A - La Sal, La Sal Mountains

The median browse trend decreased slightly from 1994 to 1999, and again in 2004. Wyoming big sagebrush (*A. tridentata* ssp. *wyomingensis*) was the most common species sampled and was sampled at eight study sites. The average density of Wyoming big sagebrush decreased significantly between 1999 and 2004. Average cover of Wyoming big sagebrush decreased significantly from 1994 to 1999 and then remained similar from 1999 to 2009. The average Wyoming big sagebrush population decadence increased significantly from 1999 to 2004, corresponding with the decrease in density. Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) was sampled on three sites in the unit. The average density of mountain big sagebrush remained similar from 1994 to 2004, with a significant increase in 2009. Much of the increase in 2009 is due to a large increase in the recruitment of young plants on the Hideout Mesa study. The average mountain big sagebrush cover decreased significantly from 1994 to 1999, but then increased again in 2004. The average population decadence of mountain big sagebrush was relatively high in 1994 at 30%, but steadily decreased through 2004 to 14% and remained low at 13% in 2009.

The median grass trend decreased slightly from 1999 to 2004, however, the average cover of perennial grass has steadily increased from 2004 to 2009. Cheatgrass (*Bromus tectorum*) has had a relatively low presence on the unit, and has remained relatively similar in cover in all sample years.

The median forb trend had a large decrease from 1994 to 1999 with slight decreases from 1987 to 1994 and from 1999 to 2004. The average cover of perennial forbs was similar from 1994 to 1999, then increased significantly from 1999 to 2004 and remained similar in 2009. No noxious weeds were sampled on the studies in this herd unit.

DCI scores are divided into categories based on ecological potentials. Eight studies in this herd unit sampled in 2009 are considered within the low potential scale for the Desirable Components Index (DCI). The average DCI ranking for these studies has decreased slowly, but steadily, from good in 1994 to fair in 2009. The decrease in DCI scores is due to a slight decrease in both the browse cover scores and the perennial forb cover scores. The three remaining deer winter range studies are within the mid-level potential scale. The average DCI ranking for these studies has remained relatively steady at fair since 1994, with a slight decrease to poor-fair in 2004. There were no studies that were considered to be within the high potential scale on this unit.

Year	DCI Score Low potential	DCI Score Mid potential	Classification Low / Mid
1994	52	59	Good / Fair
1999	50	60	Good / Fair
2004	44	51	Fair / Fair
2009	42	56	Fair / Fair

Unit 13B - La Sal, Dolores Triangle

Nine permanent range trend study sites on deer and elk winter range are located in the Dolores Triangle subunit. Data from these sites was last obtained in 2010. Four of the sites sample pinyon-juniper chainings completed in 1968. Two sites burned in wildfires in 1995 and one in 2009 removing most of the pinyon-juniper and browse from the sites.

The median browse trend remained stable throughout the early years of the study, decreased slightly in 2005 and remained lower in 2010. Desirable browse species are limited on most of the study sites in the unit. The Red Cliffs study is dominated by blackbrush (*Coleogyne ramosissima*) and the most common preferred browse species on the Steamboat East Bench study is true mountain mahogany (*Cercocarpus montanus*). Wyoming big sagebrush and basin big sagebrush are typically the most common preferred browse species on the studies within the unit. Wyoming big sagebrush and basin big sagebrush measurements were combined and will be referred to as big sagebrush. The mean density of big sagebrush decreased significantly in 2005 with a general decrease in density across the study sites. Mean density decreased further in 2010, primarily due to the fire that removed sagebrush from the Steamboat Mesa South study. The density of big sagebrush on the other studies in the unit remained similar in 2010. The mean cover of big sagebrush increased significantly in 2000, but decreased significantly in 2005. Mean decadence of big sagebrush is typically moderate on the unit, but was significantly higher in 2005 than in any other sample year.

The median grass trend has fluctuated over the course of the study years. It was slightly down in 1995 and 2005, but was slightly up in 2000 and 2010 making the overall trend fairly stable. Despite the stable trend, grasses within these communities are generally in poor condition. Grasses are not particularly diverse or abundant, and are typically dominated by one or two species. The annual species cheatgrass (*Bromus tectorum*) is common within the unit and is the dominant or codominant grass species on most of the studies. The increaser species bulbous bluegrass (*Poa bulbosa*) has been sampled at low, but increasing, frequency and cover on the Fish Park study and the three studies in the Steamboat Mesa area. Perennial grasses decreased significantly in 2005 with the significant increase in cheatgrass. Perennial grass cover increased significantly in 2010.

The median forb trend for the unit increased slightly in 1995, was down in 2000, but increased slightly again in 2005. Overall, the trend for forbs has remained relatively stable over the sample years. Perennial forbs are also in fairly poor condition across the unit with annual forbs typically being more common on the studies. The mean cover of perennial forbs was significantly higher in 2005 and 2010 than in 1995 and 2000

The low potential deer DCI has fluctuated slightly over the sample years, primarily due to the perennial and annual grass cover scores. The ranking of the DCI has ranged from very poor-poor to poor-fair throughout the sample years. There were no studies that were considered to be within the mid or high potential scale on this unit.

Year	DCI Score Low potential	Classification Low potential
1995	15	Poor
2000	26	Fair
2005	8	Very Poor
2010	16	Poor

Duration of Plan

This unit management plan was approved by the Wildlife Board on _____ and will be in effect for five years from that date, or until amended.

APPENDIX

Unit 13A - La Sal, La Sal Mountains

Grand and San Juan counties—Boundary begins at I-70 and the Green River; south along the Green River to the Colorado River; north along this river to Kane Springs Creek; southeast along this creek to Hatch Wash; south east along this wash to US-191; south on US-191 to Big Indian Road; east on this road to Lisbon Valley Road; east on this road to Island Mesa Road; east on this road to the Utah-Colorado state line; north on this state line to the Dolores River; northwest along this river to the Colorado River; northeast along this river to the Utah-Colorado state line; north on this state line to I-70; west on I-70 to the Green River.

Unit 13B - La Sal, Dolores Triangle

Grand County - Boundary begins at the Utah-Colorado state line and the Colorado River; south along the state line to the Dolores River; northwest along the Dolores River to the Colorado River; northeast along this river to the Utah-Colorado state line.

**DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 14
San Juan
March 2012**

BOUNDARY DESCRIPTIONS

Grand and San Juan Counties - Boundary begins at the confluence of the San Juan and Colorado rivers; north along the Colorado river to Kane Springs Creek; southeast along this creek to Hatch Wash; southeast along this wash to US-191; south on this road to the Big Indian road; east on this road to the Lisbon Valley road; southeast on this road to the Island Mesa road; east on this road to the Colorado state line; south on this line to the Navajo Indian Reservation boundary; southwest along this boundary to the San Juan River; west on this river to the Colorado River.

LAND OWNERSHIP

Unit 14A - San Juan, Abajo Mountains

RANGE AREA AND APPROXIMATE OWNERSHIP

Ownership	Yearlong range		Summer Range		Winter Range	
	Area (acres)	%	Area (acres)	%	Area (acres)	%
Forest Service			130454	38	1670	0.2
Bureau of Land Management			75780	22	420722	61
Utah State Institutional Trust Lands			9219	3	59981	9
Native American Trust Lands			0	0	12	0.01
Private			125767	37	210695	30
National Parks			0	0	390	0.06
Utah State Parks			0	0	0	0
Utah Division of Wildlife Resources			0	0	0	0
TOTAL			341220	100	693470	100

TOTAL FROM 2001 PLAN			112800		842200	
CHANGE (+/-)			+228420	*	-148730	*

* Change in acreage is refinement of deer habitat use data, not changes in habitat availability.

Unit 14B - San Juan, Elk Ridge**RANGE AREA AND APPROXIMATE OWNERSHIP**

Ownership	Yearlong range		Summer Range		Winter Range	
	Area (acres)	%	Area (acres)	%	Area (acres)	%
Forest Service	225	0.3	168372	65	19210	3
Bureau of Land Management	64649	94	50048	19	505156	76
Utah State Institutional Trust Lands	4055	6	4688	2	50213	8
Native American Trust Lands	0	0	0	0	7	0.01
Private	0	0	3076	1	6042	1
National Parks	15	0.02	69	0.03	54196	8
National Recreation Area	0	0	0	0	10983	2
USFS & BLM Wilderness Area	106	0.2	32973	13	12679	2
Utah Division of Wildlife Resources	0	0	0	0	0	0
TOTAL	69050	100	259226	100	658486	100

TOTAL FROM 2001 PLAN			135200		803800	
CHANGE (+/-)			+124026	*	-145314	*

* Change in acreage is refinement of deer habitat use data, not changes in habitat availability.

UNIT MANAGEMENT GOALS

Manage the deer population for optimum herd size compatible with forage resources and existing land uses with emphasis on maintaining a diverse buck age structure. Consider various publics in managing deer to provide a diversity of hunting and viewing opportunities.

POPULATION MANAGEMENT OBJECTIVES**Target Herd Size**

- < Long-term Objective - Achieve a winter target population size of 20,500 deer. (13,500 deer on **Abajo Mountains** subunit and 7,000 deer on **Elk Ridge** subunit).
- < Short-term Objective - No changes needed in population objectives. DCI scores from 2009 range trend survey improved from the previous survey and are in the "fair" and "good" classification range.

Trend of DCI scores from previous surveys is up.

	Long-term Objective	2012-2016 Objective	Change
Abajo Mountains	13,500	13,500	0
Elk Ridge	7,000	7,000	0
UNIT TOTAL	20,500	20,500	0

Herd Composition

- < **Abajo Mountains** - Maintain a three-year average postseason buck to doe ratio in accordance to the statewide plan.
- < **Elk Ridge** - Maintain a three-year average postseason ratio of 25-35 bucks per 100 does.

POPULATION MANAGEMENT STRATEGIES

Monitoring

- < Harvest
Abajo Mountains - Buck harvest strategies will be developed through the RAC and Wildlife Board process to achieve management objectives for herd composition. Utilize antlerless harvest when population objectives are met or to address specific habitat and depredation concerns.

Elk Ridge - Continue limited entry hunting to maintain herd composition objectives and quality hunting opportunities. Utilize antlerless harvest when population objectives are met or to address specific habitat and depredation concerns.
- < Population Size - Herd population will be estimated by computer modeling based on data from postseason and spring classifications, mortality estimates and harvest surveys.
- < Short-term Population Objective - Manage deer populations to attain satisfactory range conditions based on desirable components index (DCI) scores on winter ranges. Where winter range is a limiting factor, reduce current populations by 20% on any subunit when weighted DCI score falls in to "poor" classification or below. On subunits where winter range condition is classified as "fair" or better deer populations will be allowed to expand toward current long-term objectives.

Management toward short-term objectives should consider the following:

- Management efforts should focus on improving deer habitat and carrying capacity.
- Declines in winter range carrying capacity are not entirely a result of over utilization by deer.
- Population control (if needed) and habitat improvement projects should be focused on areas where range degradation is most prevalent.
- Short-term population objectives should be evaluated and updated every 5 years as new range trend data is compiled.

- Biologists should closely monitor winter ranges. If deer utilization is excessive and is causing range degradation and increased overwinter deer mortality, short-term objectives should be reduced.

< Buck Age Structure - Age class structure of the buck population will be monitored through the use of harvest check stations, field harvest checks, postseason classification, and uniform harvest surveys.

Limiting Factors (May prevent achieving management objectives)

< Crop Depredation - Damage complaints will be addressed in accordance with established state laws and DWR policies.

< Habitat - Monitor range conditions and deer use to maintain habitat quality necessary to achieve the population objectives (see Habitat Management Strategies). Identify areas where deer escapement could be enhanced through permanent or temporary road closures or other restrictions on motorized access. Excessive habitat utilization will be addressed through antlerless harvest in specific problem areas.

< Predation - Follow DWR predator management policy:

- If the population estimate is less than 90% of objective and fawn to doe ratio drops below 70 for 2 of the last 3 years or if the fawn survival rate drops below 50% for one year, then a Predator Management Plan targeting coyotes will be implemented on that subunit.

-If the population estimate is less than 90% of objective and the doe survival rate drops below 85% for 2 of the last 3 years or below 80% for one year, then a Predator Management Plan targeting cougar would be implemented on that subunit.

< Highway Mortality - Cooperate with Utah Dept. Of Transportation in construction of highway fences, passage structures, warning signs, etc.

< Illegal Harvest - Implement specific preventive measures within the context of an action plan developed in coordination with the Law Enforcement Section when illegal kill has been identified as a significant source of deer mortality.

HABITAT MANAGEMENT OBJECTIVES

< Maintain and protect existing critical deer ranges sufficient to support the population objectives. Seek cooperative projects to improve the quality and quantity of deer habitat. Maintain and enhance habitat security and escapement areas for deer.

HABITAT MANAGEMENT STRATEGIES

Monitoring

< Determine trends in habitat condition through permanent range trend studies, pellet transects, and field inspections. Land management agencies will similarly conduct range monitoring to determine vegetative trends, utilization and possible forage conflicts.

< Range trend studies will be conducted by DWR to evaluate deer habitat health, trend, and carrying capacity using the DCI. The DCI index was created as an indicator of the general health of big game winter ranges. The index incorporates shrub cover, density and age composition as well as other key

vegetation variables. Changes in DCI suggest changes in winter range capacity. The relationship between DCI and the changes in deer carrying capacity is difficult to quantify and is not known.

Habitat Protection and Maintenance

- < Work with public land management agencies to develop specific vegetative objectives to maintain the quality of important deer use areas.
- < Continue to coordinate with land management agencies in planning and evaluating resource uses and developments that could impact habitat quality.

Habitat Improvement

- < Cooperate with federal land management agencies and private landowners in carrying out habitat improvements such as reseeding, controlled burns, water developments etc. on public and private lands.
- < Cooperate with federal land management agencies and local governments in developing and administering access management plans for the purposes of habitat protection and escape or security areas.

PERMANENT RANGE TREND SUMMARIES

Unit 14 - San Juan

The median browse trend had a slight decrease from 1994 to 1999 and again from 1999 to 2004. Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) was the most common species sampled and was sampled at eleven study sites in the unit. The mean density of mountain big sagebrush increased significantly between 1999 and 2004, while mean cover steadily increased from 1994 to 2009 and was significantly higher in 2004 and 2009 than in 1994. The mean mountain big sagebrush population decadence has fluctuated slightly through the years, but has always been low at below 20% decadence. Wyoming big sagebrush (*A. tridentata* ssp. *wyomingensis*) was sampled on nine sites in the unit. The mean density of Wyoming big sagebrush decreased significantly between 1994 and 1999 with a corresponding decrease in mean cover. The mean population decadence of Wyoming big sagebrush has been relatively high at near or above 40% since 1994. There was a significant increase in decadence of Wyoming big sagebrush from 1999 to 2004, but then a significant decrease to the lowest levels of all the sample years in 2009.

The median grass trend had a slight decrease from 1994 to 1999 and again from 1999 to 2004, but then had a slight increase from 2004 to 2009. The mean cover of perennial grass showed a similar trend except that cover was significantly lower in 1999 than in 1994 and increased to higher than the 1994 level in 2009. Cheatgrass (*Bromus tectorum*) has had a moderate presence on the unit with a significant increase in cover in 1999.

The median forb trend was down from 1999 to 2004, then was slightly up from 2004 to 2009. The mean cover of perennial forbs was similar from 1994 to 2004, then increased significantly from 2004 to 2009. No noxious weeds were sampled on the studies in this herd unit.

DCI scores are divided into 3 categories based on ecological potentials. Ten studies in this herd unit sampled in 2009 are considered within the low potential scale for the Desirable Components Index (DCI). The mean DCI ranking for these studies decreased markedly from 1994 to 1999, but had returned to near 1994 levels by 2009. The decrease in DCI scores was primarily due to a

decrease in the perennial grass cover score. Six of the studies on deer winter range are considered to be within the mid-level potential scale for the deer DCI. The mean DCI ranking for these studies has remained relatively steady at fair since 1994, with a slight decrease to poor-fair in 2004. The remaining three studies that sample deer winter range are considered to be within the high potential scale for the deer DCI. The mean DCI ranking for these studies has stayed similar since 1994 at good.

Year	DCI Score Low potential	DCI Score Mid potential	DCI Score High potential	Classification Low / Mid / High
1994	43	57	85	Fair / Fair / Good
1999	26	55	85	Fair / Fair / Good
2004	27	49	72	Fair / Poor / Good
2009	39	55	88	Fair / Fair / Good

The amount of available summer range in proportion to the large amount of winter range appears to be the limiting factor for deer populations on this unit. High quality summer range represents only a small percentage of the Elk Ridge subunit.

Duration of Plan

This unit management plan was approved by the Wildlife Board on _____ and will be in effect for five years from that date, or until amended.

APPENDIX

Unit 14A - San Juan, Abajo Mountains

Grand and San Juan Counties - Boundary begins at the junction of Highway US-163 and South Cottonwood Creek (near Bluff); then north along this creek to Allen Canyon; north along this canyon to Chippean Canyon; north along this canyon to Deep Canyon; north along this canyon to Mule Canyon; north along this canyon to the Causeway; north from the Causeway to Trough Canyon; north along this canyon to North Cottonwood Creek; north along this creek to Indian Creek; north along this creek to the Colorado River; north along this river to Kane Springs Creek; southeast along this creek to Hatch Wash; southeast along this wash to Highway US-191; south on this road to the Big Indian road; east on this road to the Lisbon Valley road; southeast on this road to the Island Mesa road; east on this road to the Colorado state line; south on this line to the Navajo Indian Reservation boundary; west and south along this boundary to the San Juan River; west on this river to Highway US-163; then east on this highway to South Cottonwood Creek.

Unit 14B - San Juan, Elk Ridge

San Juan County - Boundary begins at the junction of highway US-163 and South Cottonwood Creek (near Bluff); north along this creek to Allen Canyon; north along this canyon to Chippean Canyon; north along this canyon to Deep Canyon; north along this canyon to Mule Canyon; north along this canyon to the Causeway; north from the Causeway to Trough Canyon; north along this canyon to North Cottonwood Creek; north along this creek to Indian Creek; north along this creek to the Colorado River; south on this river to the San Juan River; east on this river to highway US-163; east

on this highway to South Cottonwood Creek.

DEER HERD MANAGEMENT PLAN
Herd Unit # 15
(Henry Mountains)
March 2012

BOUNDARY DESCRIPTION

Garfield, Kane and Wayne counties—Boundary begins on SR-95 at a point two miles south of Hanksville; south on SR-95 to Lake Powell; south along the west shore of Lake Powell to SR-276 at Bullfrog; north on SR-276 to the Notom road; north on this road to a point two miles south of SR-24; east along a line that is two miles south of SR-24 to SR-95. EXCLUDING CAPITOL REEF NATIONAL PARK. USGS 1:100,000 Maps: Escalante, Hanksville, Hite Crossing, Loa. Boundary questions? Call the Price office, 435-613-3700.

LAND OWNERSHIP

RANGE AREA AND APPROXIMATE OWNERSHIP

Ownership	Yearlong range		Summer Range		Winter Range	
	Area (acres)	%	Area (acres)	%	Area (acres)	%
Forest Service	0	0%	0	0%	0	0%
Bureau of Land Management	21784	90%	32533	85%	163894	88.2%
Utah State Institutional Trust Lands	2488	10%	4384	11.5%	18567	10%
Native American Trust Lands	0	0%	0	0%	0	0%
Private	0	0%	1347	3.5%	2755	1.5%
Department of Defense	0	0%	0	0%	0	0%
USFWS Refuge	0	0%	0	0%	0	0%
National Parks	0	0%	0	0%	4.9	.003%
Utah State Parks	0	0%	0	0%	0	0%
Utah Division of Wildlife Resources	0	0%	0	0%	0	0%
TOTAL	24272	100%	38263	100%	185221	100%

UNIT MANAGEMENT GOALS

Manage for a population of healthy animals capable of providing a broad range of recreational opportunities, including hunting and viewing. Balance deer herd impacts on human needs, such as private property rights, agricultural crops and local economies. Maintain the population at a level that is within the short and long term carrying capacity of the available habitat.

POPULATION MANAGEMENT OBJECTIVES

< Target Winter Herd Size:

Long Term Objective- Achieve a target population size of **2,000**

Short Term Objective – Herd unit management directives require deer populations to be managed according to range conditions based on DCI scores on winter ranges. Where winter range is a limiting factor, reduce current populations by 20% on any unit/subunit when the weighted DCI score falls within the “poor” classification. On subunits where winter range condition is classified as “fair” or better deer populations will be allowed to expand toward current long-term objectives. Summary of the 2009 DCI data is found at the end of this management plan in the Range Trend Summary section.

Management toward short-term objectives should consider the following;

- Management efforts should focus on improving deer habitat and carrying capacity.
- Declines in winter range carrying capacity are currently not entirely a result of over utilization by deer.
- Population control (if needed) and habitat improvement projects should be focused on areas where range degradation is most prevalent.
- Short term population objectives should be evaluated and updated every 5 years as new Range Trend data is compiled.
- Biologists should closely monitor winter ranges. If deer utilization is excessive and is causing range degradation and subsequently an increase in overwinter deer mortality, short-term objectives should be reduced.

< Herd Composition –

Manage premium limited entry units for a 3-year average of 40–50 bucks/100 does with 40–55% of the harvested deer being 5 years of age or older.

POPULATION MANAGEMENT STRATEGIES

Harvest -

Establish management buck hunts on these units to provide additional hunting opportunity

If >55% of the harvested bucks (3-year average) are 5 years of age or older, premium limited entry permits will be increased by no more than 10% in any given year until the age objective is met.

If the 3-year average buck:doe ratio exceeds 50/100, management buck permits will be increased to bring the population back to objective within 3 years.

Strategies to increase management buck harvest will need to be developed in order to lower the buck:doe ratio to the management objective. Hunter crowding and the check in requirement has created a situation where conservation officers are regularly needed to determine if the harvested buck is a management buck. This is due to the genetic traits of many Henry Mtns buck deer having ‘crab claw’ points.

Monitoring

- Population Size - Utilizing harvest data, postseason and spring classifications and mortality estimates, a computer model has been developed to estimate winter population size.
- Buck Age Structure - Monitor age class structure of the buck population through the use of checking stations, postseason classification, uniform harvest surveys and field bag checks.
- Harvest - Monitor harvest through the state wide uniform harvest survey, and field bag checks.

Limiting Factors (May prevent achieving management objectives)

- Crop Depredation - Take all steps necessary to minimize depredation as prescribed by state law and DWR policy. Depredation has not been a major factor on this unit.
- Habitat - Quality summer range is more limiting than winter range on this unit. Sagebrush communities have persisted through the drought during the past decade on deer winter range.
- Pinyon-Juniper encroachment – This is currently being addressed. Maintenance on existing chainings began in 2007 to remove pinyon –juniper encroachment on both BLM and SITLA public lands. This work will enhance critical deer summer habitat for years to come.
- < Predation - Follow DWR predator management policy:
 - If the population estimate is less than 90% of objective and fawn to doe ratio drops below 70 for 2 of the last 3 years or if the fawn survival rate drops below 50% for one year, then a Predator Management Plan targeting coyotes will be implemented on that subunit.
 - If the population estimate is less than 90% of objective and the doe survival rate drops below 85% for 2 of the last 3 years or below 80% for one year, then a Predator Management Plan targeting cougar would be implemented on that subunit.
- Illegal Harvest - Should illegal kill become an identified and significant source of mortality, attempt to develop specific preventive measures within the context of an “Action Plan” developed in cooperation with the Law Enforcement Section.
- Elk - It is estimated that there are fewer than 30 elk in the population. As a result elk do not pose a limiting factor to the deer herd on the Henry Mountain unit. The elk population objective is zero animals. It is managed by hunter harvest to reach this objective.

HABITAT MANAGEMENT OBJECTIVES

- Maintain and/or enhance forage production through direct range improvements throughout the unit to help achieve population management objectives.
- Work with private and federal agencies to maintain and protect critical existing range from future losses. Excessive critical habitat utilization will be addressed.
- Provide improved habitat security and escapement opportunities for deer.

HABITAT MANAGEMENT STRATEGIES

- Continue to use range trend studies conducted by DWR to evaluate deer habitat health and trend. The DCI index was created as an indicator of the general health of big game (Deer) winter ranges. The index incorporates shrub cover, density and age composition as well as other key vegetation variables. Decreases in DCI suggest that winter range capacity has decreased. The relationship between a decrease in DCI and the reduction of deer carrying capacity is difficult to quantify and is not known.
- Work cooperatively to utilize grazing, prescribed burning and other recognized vegetative manipulation techniques to enhance deer forage quantity and quality. Specifically, cooperate with the BLM through manpower and funding to complete maintenance of existing chainings.
- Continue to monitor permanent range trend studies located throughout the range.
- Conduct cooperative seasonal range rides and surveys to evaluate forage condition and utilization.
- Cooperate with and provide input to land management planning efforts dealing with management decisions affecting habitat security, quality and quantity.
- In 2003 the Bulldog fires swept across Mt. Hillars and Mt. Pennell burning 31,000 acres of mostly pinyon-juniper habitat. Mountain brush, fir and ponderosa, and quaking aspen stands also burned. The Lonesome Beaver fire burned 3,000 acres on Mount Ellen. Nearly 3,000 acres were chained and most all of the burn was seeded aerially in 2004. Forbs, grasses, mountain brush and aspen communities established favorably after crucial spring rains enhancing critical and limiting summer habitat. The associated flush of forbs has noticeably been declining while grasses have become mostly established and mountain brush and aspen continue to increase in height.

PERMANENT RANGE TREND SUMMARIES

Unit 15 Henry Mountains

Average DCI Scores for Low Potential (Low Elevation) and Mid-Level Potential Winter Ranges for Henry Mountains Unit 15, 2004 – 2009

Low Potential Winter Range			Mid-Level Potential Winter Range		
Henry Mtn (n=5)			Henry Mtn (n=7)		
Year	Score	Ranking	Year	Score	Ranking
1994	37.4	Fair	1994	39	Poor
1999	35.6	Fair	1999	39.5	Poor
2004	22.7	Poor	2004	40.5	Poor
2009	24.5	Poor-Fair	2009	58.2	Fair

Summary:

Community Types

There were thirteen Range Trend studies sampled in WMU 15 during the summer of 2009. Seven of the studies [Eagle Bench (15-1), South Creek Chaining (15-4), Bates Knob (15-5), Box Springs Chaining (15-6), Airplane Spring (15-7), Cave Flat Chaining (15-9) and Quaking Aspen Spring (15-12)] sampled areas that had been chained and seeded in the past to remove pinyon pine and Utah juniper. The Quaking Aspen Spring (15-12) study burned in the Bulldog wildfire in 2003 and

was subsequently reseeded. One of the new studies established in 2009, Coyote Spring (15-16), samples a pinyon and juniper community that also burned in the Bulldog fire and was seeded in 2003. All eight of the studies that sample historic pinyon and juniper communities are considered to be crucial year round bison habitat. Six of the historic pinyon and juniper sites (15-1, 15-4, 15-5, 15-9, 15-12, and 15-16) are considered to be crucial deer winter habitat, one site (15-6) is considered crucial deer spring/fall/summer habitat, and one site (15-7) is considered crucial year round deer habitat. Two study sites [Sidehill Spring (15-13) and Dugout Creek (15-14)] sample mountain big sagebrush communities. The Sidehill Spring (15-13) study is considered to be crucial year round habitat for both bison and deer, while the Dugout Creek (15-14) study is considered crucial deer winter habitat. The Sidehill Spring study site burned in the 2003 Bulldog wildfire and was reseeded. Two study sites [Steven's Mesa (15-15) and Swap Mesa (15-17)] sample two desert shrub communities that are considered to be crucial year long habitat for bison and crucial winter habitat for deer. The remaining study [Nasty Flat (15-2)] samples an aspen community that is considered to be crucial year long bison habitat and crucial deer summer habitat.

Precipitation

Vegetation trends are dependent upon annual and seasonal precipitation patterns. Precipitation data from this herd unit were compiled from the Hanksville and Capital Reef National Park weather stations. The units 27 year annual mean was 6.53 inches, the 28 year spring (March to May) mean was 1.51 inches, and the 27 year fall (Sept. to Nov.) mean was 1.98 inches. The unit annual precipitation was below 75% of the normal annual mean (drought conditions) in 1989, 1996, 2002, 2007, and 2008. Spring precipitation was below 75% of normal in 1982, 1989, 1994, 1996, 1998, 2000, 2002, 2003, and 2008. Fall precipitation was below 75% of normal in 1983, 1984, 1988, 1989, 1992, 1993, 1995, 1999, 2001, 2007, and 2008 (Utah Climate Summary 2009).

Browse

The median browse trend has remained relatively steady since 1987 with a slight increase between 2004 and 2009. Three sagebrush species were sampled in the unit; Mountain big sagebrush, Wyoming big sagebrush, and black sagebrush. Mountain big sagebrush was sampled at six study sites on the unit: 15-2, 15-4, 15-5, 15-6, 15-13 and 15-14. The mean density and cover of mountain big sagebrush was similar from 1994 to 2009, but increased significantly from 2004 to 2009. Much of the increase in density is due to a large recruitment of young plants in two studies, South Creek Chaining (15-4) and Dugout Creek (15-14). Mean mountain big sagebrush population decadence has remained low at below 10% since 1994. Decadence of mountain big sagebrush was significantly lower in 1999 compared to the other sample years. Wyoming big sagebrush was sampled on two sites in the unit: 15-1 and 15-12. The mean density of Wyoming big sagebrush has remained similar since 1994 with a slight decrease in 2004. The mean Wyoming big sagebrush cover increased significantly from 1994 to 1999, but then remained similar through 2009. The mean population decadence of Wyoming big sagebrush was low at below 14% since 1994. Decadence of Wyoming big sagebrush increased significantly from 1999 to 2004, but decreased significantly again in 2009. Black sagebrush was sampled in four studies in the unit: 15-4, 15-12, 15-13 and 15-14. The mean density and cover of black sagebrush decreased significantly from 1999 to 2004. The large decline in black sagebrush was due to the Bulldog fire which burned the Quaking Aspen Spring and Sidehill Spring study sites in 2003. The mean population decadence of black sagebrush was slightly higher in 2004, but was low (less than 10%) in all sample years.

Herbaceous Understory

The median grass trend decreased from 1987 to 1994 and again from 1999 to 2004, but increased again 2009. The mean perennial grass sum of nested frequency was similar in 1994, 1999 and 2009, but was significantly lower in 2004 than all other sample years. This same trend is reflected in the mean cover of perennial grass on the unit. Cheatgrass has had a relatively low presence on the unit, but was significantly higher in nested frequency and cover in 1999. The median forb trend decreased slightly from 1987 to 1994, then decreased more from 1999 to 2004. The mean perennial forb sum of nested frequency has decreased slightly, but steadily since

1994. The sum of nested frequency of perennial forbs was significantly lower in 2004 and 2009 than in 1994. The mean cover of perennial forbs decreased significantly from 1994 and 1999, but remained similar from 1999 to 2009. No noxious weeds were sampled on the studies in this herd unit.

Desirable Components Index

Five studies in this herd unit are considered within the low potential scale for the deer Desirable Components Index (DCI): 15-1, 15-9, 15-15, 15-16 and 15-17. The mean DCI ranking for these studies decreased from fair in 1994 and 1999 to poor and poor-fair in 2004 and 2009, respectively. *The decrease in DCI scores is primarily due to a decrease in browse scores. This is an artifact of the addition of three new trend sites, Steven's Mesa in 2004, and Coyote Creek and Swap Mesa in 2009, all of which had much lower browse scores than the Eagle Bench study.* The seven remaining winter range studies, 15-4, 15-5, 15-6, 15-7, 15-12, 15-13 and 15-14, are within the mid-level potential scale. The mean DCI ranking for these studies remained steady at poor from 1994 to 2004, then increased to fair in 2009. Much of the increase in the average DCI score was due to an increase in the perennial grass cover score.

Note: Stevens Mesa and Swap Mesa sites were established to assess habitat on bison range. Both sites should not be considered deer winter range and should be excluded from the deer DCI.

Duration of Plan

This unit management plan was approved by the Wildlife Board on _____ and will be in effect for five years from that date, or until amended.

**DEER HERD UNIT MANAGEMENT PLAN
Deer Herd Unit # 16
Central Mountains
See Also
Deer Herd Unit #12
San Rafael Management Plan**

April, 2012

CENTRAL MOUNTAINS BOUNDARY DESCRIPTION

Utah, Carbon, Emery, Juab, Sevier and Sanpete counties - Boundary begins at the junction of US-6 and I-15 in Spanish Fork; southeast on US-6 to SR-10 in Price; south on SR-10 to I-70; west on I-70 to US-50 at Salina; north on US-50 to I-15 at Scipio; north on I-15 to US-6 in Spanish Fork.

LAND OWNERSHIP

RANGE AREA AND APPROXIMATE OWNERSHIP

Ownership	Yearlong range		Summer Range		Winter Range	
	Area (acres)	%	Area (acres)	%	Area (acres)	%
Forest Service	0	0%	721980	73.8%	300717	28.3%
Bureau of Land Management	24	2.2%	28187	2.9%	224215	21.1%
Utah State Institutional Trust Lands	1039	93.4%	14980	1.5%	110636	10.4%
Native American Trust Lands	0	0%	0	0%	0	0%
Private	50	4.5%	198911	20.3%	353779	33.3%
Department of Defense	0	0%	0	0%	200	0%
USFWS Refuge	0	0%	0	0%	0	0%
National Parks	0	0%	0	0%	0	0%
Utah State Parks	0	0%	23	0%	116	0%
Utah Division of Wildlife Resources	0	0%	14774	1.5%	72704	6.8%
TOTAL	1113	100%	978855	100%	1062367	100%

UNIT MANAGEMENT GOALS

- Manage for a population of healthy animals capable of providing a broad range of recreational opportunities, including hunting and viewing.
- Balance deer herd impacts on human needs, such as private property rights, agricultural crops and local economies.

- Maintain the population at a level that is within the long term carrying capacity of the available habitat, based on winter range trend studies conducted by the DWR every five years. Using the long term population objective as a guide, the short term objective will be adjusted according to the Desired Components Index (DCI). The DCI measured during range study surveys was created as an indicator of the general health of big game winter ranges. The index incorporates shrub cover, density and age composition as well as other key vegetation variables. Decreases in DCI suggest that winter range carrying capacity has decreased.

POPULATION MANAGEMENT OBJECTIVES

< Target Winter Herd Size:

< **Long Term Objective-**

Central Mountains, Manti Subunit -	38,000 deer
Central Mountains, Nebo Subunit -	22,600 deer

Total Central Mountains Objective -	60,600 deer
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< **Short Term Objective** – Manage deer populations according to range conditions based on DCI scores on winter ranges. All winter ranges were measured in 2007 (Nebo and West Manti) and again in 2009 (east Manti). Data from these studies suggest that DCI scores on all winter ranges are stable to slightly improving. Most winter ranges received a "fair" rating. Thus, there will be no short term population reductions recommended to improve winter range health. Biologists will continue to carefully monitor winter ranges and make recommendations to improve and protect winter habitat. Should over-utilization and range damage by deer occur, recommendations will be made to locally reduce deer populations.

< Herd Composition - A three year average postseason buck to doe ratio in accordance to the statewide plan.

< Harvest - General Season Unit by Unit Buck deer hunt regulations, using Archery, Rifle, and Muzzleloader hunts. Buck permits will be adjusted to maintain buck/doe ratio objectives. Antlerless permits will only be issued to address specific localized depredation or range degradation concerns.

POPULATION MANAGEMENT STRATEGIES

Monitoring

< Population Size - A population estimate will be made based on fall and spring herd composition counts conducted by biologists, harvest surveys, and mortality estimates based on radio collar studies and range rides. These data will be used in a computer model to determine a winter deer herd population size.

< Buck Age Structure - Monitor age class structure of the buck population through the use of checking stations, postseason classification, uniform harvest surveys and field bag checks.

< Harvest - The primary means of monitoring harvest will be through the statewide uniform harvest survey and the use of checking stations.

Limiting Factors (May prevent achieving management objectives)

- < Crop Depredation - Take all steps necessary to minimize depredation as prescribed by state law and DWR policy.
- < Habitat – Winter range is a limiting factor for deer on this unit. Portions of critical winter ranges are in poor condition (See range trend summary below). Factors contributing to poor range conditions include recent droughts and range use by deer and domestic livestock. This has resulted in a reduction of winter range carrying capacity. Utilization of key shrub species on critical winter ranges will be closely monitored.
- < Predation - - Follow DWR predator management policy:
 - If the population estimate is less than 90% of objective and fawn to doe ratio drops below 70 for 2 of the last 3 years or if the fawn survival rate drops below 50% for one year, then a Predator Management Plan targeting coyotes will be implemented on that subunit.
 - If the population estimate is less than 90% of objective and the doe survival rate drops below 85% for 2 of the last 3 years or below 80% for one year, then a Predator Management Plan targeting cougar would be implemented on that subunit.
- < Highway Mortality - Cooperate with the Utah Dept. Of Transportation in construction of highway fences, passage structures and warning signs etc. Collect highway mortality data. A Deer Highway Crossing Study along SR-6 is underway.
- < Illegal Harvest - Should illegal kill become an identified and significant source of mortality attempt to develop specific preventive measures within the context of an Action Plan developed in cooperation with the Law Enforcement Section.

HABITAT MANAGEMENT OBJECTIVES

- < Protect, maintain, and/or improve deer habitat through direct range improvements to support and maintain herd population management objectives.
- < Work with private landowners and, federal, state, local and tribal governments to maintain and protect critical and existing ranges from future losses and degradation.
- < Provide improved habitat security and escapement opportunities for deer.
- < Mitigate impacts from energy development activities.
- < Minimize deer vehicle collisions along highways on the unit.

HABITAT MANAGEMENT STRATEGIES

- < Continue to improve, protect, and restore sagebrush steppe habitats critical to deer. Cooperate with federal land management agencies and private landowners in carrying out habitat improvements such as pinion-juniper removal, reseeding, controlled burns, grazing management, water developments etc. on public and private lands. Habitat improvement projects will occur on both winter ranges as well as summer range.

- < Continue to monitor permanent range trend studies located throughout the unit.
- < Conduct cooperative seasonal range rides and surveys to evaluate forage condition and utilization. Determining opportunities for habitat improvements will be an integral part of these surveys.
- < Work toward long term habitat protection and preservation through the use of agreements with federal agencies, local governments and the use of Conservation Easements etc. on private lands.
- < Support, cooperate with, and provide input to land management planning efforts dealing with actions affecting habitat security, quality and quantity.
- < Work with land management agencies and energy companies to minimize and mitigate impacts of energy development activities. Oil and Gas specific habitat biologists will lead this effort.
- < Continue to monitor deer survival on this unit through radio telemetry studies. Use telemetry data to determine potential habitat improvement projects.
- < Utilize antlerless deer harvest to improve or protect forage conditions when vegetative declines are attributed to deer over utilization.

PERMANENT RANGE TREND SUMMARIES

Unit 16a Central Mountains, Nebo Subunit

Average DCI Scores for Low Potential (Low Elevation) and Mid-Level Potential Winter Ranges for the Central Mountains, Nebo Subunit, 1997 - 2007

Low Potential Winter Range

Nebo (n=9)

Year	Score	Ranking
1997		
2002		
2007	5	Very Poor
2012		

Mid-Level Potential Winter Range

Nebo (n=10)

Year	Score	Ranking
1997	50	Fair
2002	44	Poor
2007	40	Poor
2012		

Summary:**Unit 16b and 16c Central Mountains, Manti Subunit (West Side)**

Average DCI Scores for Mid-Level Potential Winter Ranges for the West Slope of the Central Mountains, Manti Subunit, 1997 - 2007

**Mid-Level Potential Winter Range
Northwest Manti (n=8)**

Year	Score	Ranking
1997	40	Poor
2002	36	Poor
2007	34	Very Poor
2012		

**Low Potential Winter Range
Southwest Manti (n=9)**

Year	Score	Ranking
1997	39	Fair
2002	30	Fair
2007	38	Fair
2012		

**Mid-Level Potential Winter Range
Southwest Manti (n=4)**

Year	Score	Ranking
1997	51	Fair-Poor
2002	43	Poor
2007	32	Very Poor
2012		

Summary:**Unit 16b Central Mountains, Manti Subunit (Northeast Manti)**

Average DCI Scores for Low Potential (Low Elevation) for the Central Mountains, Northeast Manti Subunit, 1994 - 2009

Low Potential Winter Range
Northeast Manti (n=8)

Year	Score	Ranking
1994	42	Fair
1998/99	57	Good
2004	32	Fair
2009	43	Fair-Good

Summary:

Critical low elevation winter ranges on the Northeast Manti subunit support high densities of deer, particularly during heavy winters. Browse utilization by deer as well as by domestic sheep and cattle utilizing these ranges is very heavy. The primary browse species on these critical winter ranges are Wyoming big sagebrush and Mexican Cliffrose. This area had a severe sagebrush die-off at low elevations during the extreme drought years of 2002 and 2003. This resulted in a significant reductions in browse cover and abundance as well as high decadence, particularly when the area was surveyed in 2004. Since then, these indices improved somewhat with a more favorable precipitation pattern in recent years. Although much of the mature sagebrush community is decadent or dead today, there are an abundance of seedling shrubs being recruited. The grass and forb communities have remained relatively stable over the past 15 years. As a result, the DCI has improved slightly and is comparable to that found in 1994.

The carrying capacity of critical low elevation winter ranges has been reduced over the past decade as a result of sagebrush die-offs, oil and gas development, and over-utilization. Extensive winter range improvement projects have been implemented to improve this habitat. Winter ranges at slightly higher elevations appear to be healthy and show little use, even during light winters.

Unit 16c Central Mountains, Southeast Manti Subunit

Average DCI Scores for Low Potential (Low Elevation) and Mid-Level Potential Winter Ranges for the Central Mountains, Southeast Manti Subunit, 1994 - 2009

Low Potential Winter Range			Mid-Level Potential Winter Range		
Southeast Manti (n=8)			Southeast Manti (n=17)		
Year	Score	Ranking	Year	Score	Ranking
1994	35	Fair	1994	48	Poor-Fair
1999	40	Fair	1999	65	Fair-Good
2004	38	Fair	2004	54	Fair
2009	42	Fair	2009	58	Fair

Summary:

Vegetation trends are dependent upon annual and seasonal precipitation patterns. When the range trend data was collected on this unit in 2009, percent annual precipitation was below drought levels at approximately 65% of normal, the lowest annual mean recorded in 20+ years. The units annual precipitation was below 75% of the normal annual mean (drought conditions) in 1986, 1989, 2002, 2003 and 2008.

Browse trends for Mountain big sagebrush increased in density as a result of recruitment. Wyoming big sagebrush also increased in density primarily due to an increase in young plants. Decadence decreased significantly again in 2009 to more moderate levels. Black sagebrush also increased in density primarily due to an increase in young plants.

Herbaceous understory: The median grass nested frequency trend was between the high of 1999 and the low of 2004. Percent cover nested frequency was highest in 2009 and lowest in 2004. Cheatgrass was sampled on only a few studies at very low frequency and cover. The mean perennial forb sum of nested frequency was similar to 2004. The mean cover of perennial forbs decreased significantly from 2004 to 2009. No noxious weeds were sampled on the studies in this herd unit.

Desirable Components Index

Five of the studies that sample deer winter habitat, 16C-22, 16C-32, 16C-33, 16C-36, and 16C-40, are considered to be within the low potential scale for the deer Desirable Components Index (DCI). The mean DCI ranking for these studies has remained relatively stable at Fair over the sample years.

Nineteen studies, 16C-13, 16C-14, 16C-15, 16C-17, 16C-18, 16C-20, 16C-23, 16C-24, 16C-25, 16C-26, 16C-27, 16C-28, 16C-29, 16C-31, 16C-34, 16C-35, 16C-41, 16C-42 and 16C-43, are considered to be within the mid-level potential scale for the deer DCI on this unit. The mean mid-level potential DCI ranking of the unit increased from poor-fair to fair-good from 1994 to 1999 then decreased to fair in 2004 and 2009.

Three studies, 16C-19, 16C-30 and 16C-44, are considered to be within the high potential scale for the deer DCI on this unit. There was little change in the mean high potential DCI ranking and scores remained similar over the sample years with a ranking of good.

APPENDIX - SUBUNIT HUNT BOUNDARY DESCRIPTIONS

Central Mountains, Nebo

Juab, Millard, Sanpete, Sevier and Utah counties—Boundary begins at US-6 and I-15 at Spanish Fork; southeast on US-6 to US-89 near Thistle; south on US-89 to US-50 at Salina; northwest on US-50 to I-15 at Scipio; north on I-15 to US-6 at Spanish Fork. Excludes all CWMUs. USGS 1:100,000 Maps: Maps: Delta, Manti, Nephi, Provo, Salina

Central Mtns, Manti/San Rafael

Carbon, Emery, Sanpete, Sevier and Utah counties—Boundary begins US-6 and US-89 in Spanish Fork Canyon; southeast on US-6 to I-70; east on I-70 to the Green River; south along this river to the Colorado River; south along this river (and the west shore of Lake Powell) to SR-95; north on SR-95 to SR-24 (hunters may harvest deer within 2 miles south of SR-24 between SR-95 and the Notom Road); west on SR-24 to Caineville and the Caineville Wash road; north on this road to the Cathedral Valley road; west on this road to Rock Springs Bench and the Last Chance Desert road; north on this road to the Blue Flats road; north and east on this road to the Willow Springs road; north on this road towards Windy Peak and the Windy Peak road; north on this road to I-70; west on I-70 to US-89; north on US-89 to US-6 in Spanish Fork Canyon.